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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/730,100	12/05/2000	Paul S. Nolan	6121	7486

29394 7590 12/08/2003

BWX TECHNOLOGIES, INC.  
1562 BEESON STREET  
ALLIANCE, OH 44601

EXAMINER
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LISH, PETER J

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 12/08/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/730,100

Applicant(s)

NOLAN ET AL.

Examiner

Peter J Lish

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-25 is/are rejected.
- 7) ☒ Claim(s) 21 and 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### **DETAILED ACTION**

Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Double Patenting***

Claims 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,503,470 alone or in view of Rosenthal et al. (US 6,214,304). Claim 1 of '470 comprises the identical process steps of the instant application, but does not specify the use of an oxidizing agent comprising chlorine, as presently claimed. '470 requires the mercury to be oxidized, which is broad enough to encompass the process step of claim 1, step b in the present application. Oxidizing agents comprising chlorine are known oxidizing agents, which are used for the oxidation of mercury, see for example Rosenthal et al.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 19-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed

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invention. The specification does not support the claim language of claim 1, which reads, "elemental mercury at a concentration of less than 50 ug/Nm<sup>3</sup>". The specification has support only for a concentration of between 5 and 30 ug/Nm<sup>3</sup>.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 19-20 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenthal et al. (US 6,214,304) in view of Audeh et al. (US 5,034,203).

Rosenthal teaches a method for the removal of metallic (or elemental) mercury from a flue gas, comprising converting the mercury to mercuric sulfide, using an aqueous alkali sulfide solution. The alkali is preferably sodium tetrasulfide, which comprises aqueous sulfide ions. It is also taught that prior to the introduction of alkali sulfide solution, an oxidizing agent may be added to the flue gas. As oxidizing agents, hydrogen peroxide, ozone, and NaOCl are taught. Official Notice is taken that NaOCl is the sodium salt of hypochlorous acid, HClO.

Rosenthal et al. does not explicitly teach the concentration of the mercury in the flue gas before treatment. However, it would have been obvious to one of ordinary skill at the time of invention to use the process of Rosenthal et al. on a flue gas containing any concentration of mercury for which removal is desired.

Audeh teaches a similar method for the removal of mercury from a gas by contacting the gas with an aqueous solution of an alkali polysulfide, such as sodium tetrasulfide. Audeh

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additionally teaches that the process results in the near complete removal (final concentrations of less than  $0.01 \text{ ug/m}^3$ ) of mercury from the gas composition, when the initial concentration of mercury in the gas is between  $0.03 \text{ ug/m}^3$  and  $10 \text{ ug/m}^3$ . It is therefore expected that the process of Rosenthal will result in a near complete removal of mercury from the flue gas, when the initial concentration is within this range.

Regarding claims 20 and 24, Rosenthal does not explicitly teach the amount of oxidizing agent to be utilized. Because the concentration of mercury in the flue gas is so low, it is expected that even a small addition of NaOCl oxidizing agent is an amount sufficient to react with all the mercury. Additionally, the selection of a specific amount of oxidizing agent could have been determined through routine experimentation, and is viewed to be the optimization of a known process, held to be obvious by *In re Boesch*, 205 USPQ 215.

#### ***Allowable Subject Matter***

Claims 21 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and rewritten to overcome rejections under 35 U.S.C. 112.

#### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 703-308-1772 until December 11<sup>th</sup> and 571-272-1354 thereafter. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached at 703-308-3837 until December 11<sup>th</sup> and 571-272-1358 thereafter. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



PL

**STUART L. HENDRICKSON**  
**PRIMARY EXAMINER**